

## SEQUENCE LISTING

<110> Guillemette, Chantal

<120> Method for determining predisposition to  
a physiological reaction in a patient

<130> 6013-118US

<150> PCT/2003/001269

<151> 2003-08-20

<150> 60/412,002

<151> 2002-09-20

<160> 71

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<223> UGT1A9 #38 (Reverse)

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<223> UGT1A9 #41 (Forward)

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<210> 8

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 <223> UGT1A7 #17 (Reverse)

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 <223> UGT1A7 #122 (Forward)

<400> 9  
 gctggacggc accattg

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<210> 10  
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 <223> UGT1A7 #123 (Reverse)

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19

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<210> 13  
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17

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<210> 18

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<212> DNA

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<222> (1)...(17)

<223> ASO UGT1A7 G115 (Forward)

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17

<210> 19

<211> 17

<212> DNA

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17

<210> 20

<211> 19

<212> DNA

<213> Homo sapiens

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<222> (1)...(19)

<223> Taqman UGT1A7 codon 139/131 #387 (Forward)

<400> 20

gcaccattgc gaagtgc

19

<210> 21

<211> 22

<212> DNA

<213> Homo sapiens

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<221> primer\_bind

<222> (1)...(22)

<223> Taqman UGT1A7 codon 139/131 #388 (Reverse)

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<210> 22

<211> 16

<212> DNA

<213> Homo sapiens

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<222> (1)...(16)

<223> Taqman UGT1A7 codon 139/131 K129/K131-FAM  
(Forward)

<400> 22

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16

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<212> DNA

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<222> (1)...(17)

<223> Taqman UGT1A7 codon 139/131 K129/K131-TET  
(Forward)

<400> 23

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17

<210> 24

<211> 26

<212> DNA

<213> Homo sapiens

<220>

<221> primer\_bind

<222> (1)...(26)

<223> Taqman UGT1A7 codon 139 #546 (Forward)

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26

<210> 25

<211> 20

<212> DNA

<213> Homo sapiens

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<221> primer\_bind  
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 <223> Taqman UGT1A7 codon 139 #544 (Reverse)

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 <223> Taqman UGT1A7 codon 139 D139-Vic (Forward)

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<210> 28  
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 <222> (1)...(31)  
 <223> Forward C3Y UGT1A9

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<210> 29  
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 <222> (1)...(31)  
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<400> 29

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31

<210> 30

<211> 34

<212> DNA

<213> Homo sapiens

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<221> primer\_bind

<222> (1)...(34)

<223> Forward M33T UGT1A9

<400> 30

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34

<210> 31

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<212> DNA

<213> Homo sapiens

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<221> primer\_bind

<222> (1)...(34)

<223> Reverse M33T UGT1A9

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<213> Homo sapiens

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<221> primer\_bind

<222> (1)...(45)

<223> Forward E139D UGT1A7

<400> 32

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45

<210> 33

<211> 45

<212> DNA

<213> Homo sapiens

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<221> primer\_bind

<222> (1)...(45)

<223> Reverse E139D UGT1A7

<400> 33

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<210> 34

<211> 23

<212> DNA



<213> Homo sapiens

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<221> primer\_bind

<222> (1)...(23)

<223> Forward G115S UGT1A7

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23

<210> 35

<211> 23

<212> DNA

<213> Homo sapiens

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<222> (1)...(23)

<223> Reverse G115S UGT1A7

<400> 35

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23

<210> 36

<211> 2585

<212> DNA

<213> Homo sapiens

<220>

<221> allele

<222> (1)...(2585)

<223> UGT1A9\*1

<400> 36

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atacc						2585

&lt;210&gt; 37

&lt;211&gt; 2585

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1)...(2585)

&lt;223&gt; UGT1A9\*2

&lt;400&gt; 37

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atacc						2585

&lt;210&gt; 38

&lt;211&gt; 2585

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1)...(2585)

&lt;223&gt; UGT1A9\*3

&lt;400&gt; 38

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&lt;210&gt; 39

&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1)...(2372)

&lt;223&gt; UGT1A9 Haplotype 1

&lt;400&gt; 39

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&lt;210&gt; 40

&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1) ... (2372)

&lt;223&gt; UGT1A9 Haplotype 2

&lt;400&gt; 40

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&lt;210&gt; 41

&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1)...(2372)

&lt;223&gt; UGT1A9 Haplotype 3

&lt;400&gt; 41

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&lt;210&gt; 42

&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1)...(2372)

&lt;223&gt; UGT1A9 Haplotype 4

&lt;400&gt; 42

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<220>  
 <221> allele  
 <222> (1)...(2372)  
 <223> UHT1A9 Haplotype 5

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&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

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&lt;222&gt; (1) ... (2372)

&lt;223&gt; UGT1A9 Haplotype 8

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&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1) ... (2372)

&lt;223&gt; UGT1A9 Haplotype 9

&lt;400&gt; 47

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&lt;210&gt; 48

&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1)...(2372)

&lt;223&gt; UGT1A9 Haplotype 10

&lt;400&gt; 48

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&lt;210&gt; 49

&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1)...(2372)

&lt;223&gt; UGT1A9 Haplotype 11

&lt;400&gt; 49

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&lt;210&gt; 50

&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1) ... (2372)

&lt;223&gt; UGT1A9 Haplotype 12

&lt;400&gt; 50

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&lt;210&gt; 51

&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1)...(2372)

&lt;223&gt; UGT1A9 Haplotype 13

&lt;400&gt; 51

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&lt;210&gt; 52

&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1)...(2)

&lt;223&gt; UGT1A9 Haplotype 14

&lt;400&gt; 52

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&lt;213&gt; Homo sapiens

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&lt;222&gt; (1)...(2372)

&lt;223&gt; UGT1A9 Haplotype 15

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2372

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<223> UGT1A9 Haplotype 16

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<211> 2372

<212> DNA

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<220>

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&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1) ... (2372)

&lt;223&gt; UGT1A9 Haploytpe 19

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&lt;210&gt; 58

&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1)...(2372)

&lt;223&gt; UGT1A9 Haplotype 20

&lt;400&gt; 58

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&lt;210&gt; 59

&lt;211&gt; 2372

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1) ... (2372)

&lt;223&gt; UGT1A9 Haplotype 21

&lt;400&gt; 59

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&lt;210&gt; 60

&lt;211&gt; 1229

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1) ... (1229)

&lt;223&gt; UGT1A7\*1

&lt;400&gt; 60

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<210> 61  
 <211> 1229  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> allele  
 <222> (1)...(1229)  
 <223> UGT1A7\*2

<400> 61						
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<210> 62  
 <211> 1229  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> allele  
 <222> (1)...(1229)  
 <223> UGT1A7\*3

<400> 62						
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&lt;210&gt; 63

&lt;211&gt; 1229

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1)...(1229)

&lt;223&gt; UGT1A7\*4

&lt;400&gt; 63

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&lt;210&gt; 64

&lt;211&gt; 1229

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1)...(1229)

&lt;223&gt; UGT1A7\*5

&lt;400&gt; 64

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tctttctggt	ttaaggaatt	cttttgtacc	aattcactta	attgttgggt	agcaaattgt	1020
ataaagcagc	tcttgttgat	atgtaagtgt	atacaattga	tataattgta	gatcatatct	1080
aggctgcaat	ctaaatgcta	tttttgga	aatacaaaaa	aaccacagta	agaaatgaaa	1140
cttccctttt	tttgctaatt	ctacactacc	cccagaggaa	aatattctta	gcagttttgt	1200
gtgaattggt	ttcaattttt	ttgaaatta				1229

&lt;210&gt; 65

&lt;211&gt; 1229

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; allele

&lt;222&gt; (1) ... (1229)

&lt;223&gt; UGT1A7\*6

&lt;400&gt; 65

atggctcgtg	caggggtggac	tggcctcctt	ccactatatg	tgtgtctact	gctgacctgt	60
ggctttgcc	aggcagggaa	gctgctggta	gtgcccatgg	atgggagcca	ctgggttcacc	120
atgcagtcgg	tgggtggagaa	actcatcctc	agggggcatg	aggtgggtcgt	agtcatgcc	180
gaggtgagtt	ggcaactggg	aagatcactg	aattgcacag	tgaagactta	ctcaacctca	240
tacactctgg	aggatcagga	ccgggagttc	atgggtttttg	ccgatgctcg	ctggacggca	300
ccattgcgaa	gtgcattttc	tctattaaca	agttcatcca	atggtatttt	tgacttattt	360
ttttcaaatt	gcaggagttt	gtttaatgac	cgaaaattag	tagaatactt	aaaggacagt	420
tgttttgatg	cagtgtttct	cgatcctttt	gatgcctgtg	gcttaattgt	tgccaaatat	480
ttctccctcc	cctctgtggg	cttcgccagg	ggaatatttt	gccactatct	tgaagaaggt	540
gcacagtgcc	ctgctcctct	ttcctatgtc	cccagacttc	tcttaggggt	ctcagacgcc	600
atgactttca	aggagagagt	atggaaccac	atcatgcact	tggaggaaca	tttattttgc	660
ccctattttt	tcaaaaatgt	cttagaaata	gcctctgaaa	ttctccaaac	ccctgtcacg	720
gcatatgac	tctacagcca	cacatcaatt	tggttggtgc	gaactgactt	tgttttggag	780
tatcccaaac	ccgtgatgcc	caatatgac	ttcattgggtg	gtatcaactg	tcacagggga	840
aagccagtgc	ctatggtaag	ttatctcccc	tttagcacat	taagaataat	ctggccttgg	900
aaattaaaag	atttcttaca	gaatcataat	ttatcattta	catttgtccc	atttggaatt	960
tctttctggt	ttaaggaatt	cttttgtacc	aattcactta	attgttgggt	agcaaattgt	1020
ataaagcagc	tcttgttgat	atgtaagtgt	atacaattga	tataattgta	gatcatatct	1080
aggctgcaat	ctaaatgcta	tttttgga	aatacaaaaa	aaccacagta	agaaatgaaa	1140
cttccctttt	tttgctaatt	ctacactacc	cccagaggaa	aatattctta	gcagttttgt	1200
gtgaattggt	ttcaattttt	ttgaaatta				1229

&lt;210&gt; 66

<211> 1229  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> allele  
 <222> (1)...(1229)  
 <223> UGT1A7\*7

<400> 66  
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 atgcagtcgg tgggtggagaa actcatcctc agggggcatg aggtggtcgt agtcatgcca 180  
 gaggtgagtt ggcaactggg aagatcactg aattgcacag tgaagactta ctcaacctca 240  
 tacactctgg aggatcagga ccgggagttc atgggtttttg ccgatgctcg ctggacggca 300  
 ccattgcgaa gtgcattttc tctattaaca agttcatcca atgggtatttt tgacttatttt 360  
 ttttcaaatt gcaggagttt gtttaaggac aaaaaattag tagaatactt aaaggacagt 420  
 tgttttgatg cagtgtttct cgatcctttt gatgcctgtg gcttaattgt tgccaaatat 480  
 ttctccctcc cctctgtggg cttcgccagg ggaatatattt gccactatct tgaagaaggt 540  
 gcacagtgcc ctgctcctct ttcctatgtc ccagacttc tcttaggggt ctcagacgcc 600  
 atgactttca aggagagagt atggaaccac atcatgcact tggaggaaca tttattttgc 660  
 ccctattttt tcaaaaatgt cttagaaata gcctctgaaa ttctccaaac ccctgtcacg 720  
 gcatatgac tctacagcca cacatcaatt tgggtgttgc gaactgactt tgttttggag 780  
 tatcccaaac ccgtgatgcc caatatgac ttcattgggt gtatcaactg tcatcaggga 840  
 aagccagtgc ctatggtgta ttatctcccc ttttagcacat taagaataat ctggcctttgg 900  
 aaattaaaag atttcttaca gaatcataat ttatcattta catttgtccc atttgaatt 960  
 tctttctggt ttaaggaatt cttttgtacc aattcactta attgttgggt agcaaattgt 1020  
 ataaagcagc tcttgttgat atgtaagtgt atacaattga tataattgta gatcatatct 1080  
 aggtgcgaat ctaaattgcta tttttggaaa aatacaaaaa aaccacagta agaaatgaaa 1140  
 cttccctttt tttgctaatt ctacactacc ccagaggaa aatattctta gcagttttgt 1200  
 gtgaattgtt ttcaattttt ttgaaatta 1229

<210> 67  
 <211> 1229  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> allele  
 <222> (1)...(1229)  
 <223> UGT1A7\*8

<400> 67  
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 ggctttgcca aggcagggaa gctgctggta gtgcccatgg atgggagcca ctgggttcacc 120  
 atgcagtcgg tgggtggagaa actcatcctc agggggcatg aggtggtcgt agtcatgcca 180  
 gaggtgagtt ggcaactggg aagatcactg aattgcacag tgaagactta ctcaacctca 240  
 tacactctgg aggatcagga ccgggagttc atgggtttttg ccgatgctcg ctggacggca 300  
 ccattgcgaa gtgcattttc tctattaaca agttcatcca atgggtatttt tgacttatttt 360  
 ttttcaaatt gcaggagttt gtttaaggac aaaaaattag tagaatactt aaaggacagt 420  
 tgttttgatg cagtgtttct cgatcctttt gatgcctgtg gcttaattgt tgccaaatat 480  
 ttctccctcc cctctgtggg cttcgccagg ggaatatattt gccactatct tgaagaaggt 540  
 gcacagtgcc ctgctcctct ttcctatgtc ccagacttc tcttaggggt ctcagacgcc 600  
 atgactttca aggagagagt acggaaccac atcatgcact tggaggaaca tttattttgc 660  
 ccctattttt tcaaaaatgt cttagaaata gcctctgaaa ttctccaaac ccctgtcacg 720  
 gcatatgac tctacagcca cacatcaatt tgggtgttgc gaactgactt tgttttggag 780  
 tatcccaaac ccgtgatgcc caatatgac ttcattgggt gtatcaactg tcatcaggga 840

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aagccagtgc ctatggtaag ttatctcccc tttagcacat taagaataat ctggccttgg 900
aaattaaaag atttcttaca gaatcataat ttatcattta catttgtccc atttggaatt 960
tctttctggg ttaaggaatt cttttgtacc aattcactta attggtgggt agcaaattgt 1020
ataaagcagc tcttggtgat atgtaagtgt atacaattga tataattgta gatcatatct 1080
aggctgcaat ctaaagtcta tttttggaaa aatacaaaaa aaccacagta agaaatgaaa 1140
cttccctttt tttgctaatt ctacactacc cccagaggaa aatattctta gcagttttgt 1200
gtgaattggt ttcaattttt ttgaaatta 1229

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<210> 68
<211> 1229
<212> DNA
<213> Homo sapiens

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<220>
<221> allele
<222> (1) ... (1229)
<223> UGT1A7*9

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atgcagtcgg tgggtggagaa actcatcctc agggggcatg aggtggtcgt agtcatgcca 180
gaggtgagtt ggcaactggg aagatcactg aattgcacag tgaagactta ctcaacctca 240
tacactctgg aggatcagga ccgggagttc atggtttttg ccgatgctcg ctggacggca 300
ccattgcgaa gtgcattttc tctattaaca agttcatcca atagtatttt tgacttattt 360
ttttcaaatt gcaggagttt gtttaaggac aaaaaattag tagaatactt aaaggagagt 420
tgttttgatg cagtgtttct cgatcctttt gatgcctgtg gcttaattgt tgccaaatat 480
ttctccctcc cctctgtggg ctccgccagg ggaatatttt gccactatct tgaagaagg 540
gcacagtgcc ctgctcctct ttcctatgtc cccagacttc tcttaggggt ctccagacgcc 600
atgactttca aggagagagt atggaaccac atcatgcact tggaggaaca tttattttgc 660
ccctattttt tcaaaaatgt cttagaaata gcctctgaaa ttctccaaac ccctgtcacg 720
gcatatgatc tctacagcca cacatcaatt tgggtgttgc gaactgactt tgttttggag 780
tatcccaaac ccgtgatgcc caatatgatc ttcattgggt gtatcaactg tcatcaggga 840
aagccagtgc ctatggtaag ttatctcccc tttagcacat taagaataat ctggccttgg 900
aaattaaaag atttcttaca gaatcataat ttatcattta catttgtccc atttggaatt 960
tctttctggg ttaaggaatt cttttgtacc aattcactta attggtgggt agcaaattgt 1020
ataaagcagc tcttggtgat atgtaagtgt atacaattga tataattgta gatcatatct 1080
aggctgcaat ctaaagtcta tttttggaaa aatacaaaaa aaccacagta agaaatgaaa 1140
cttccctttt tttgctaatt ctacactacc cccagaggaa aatattctta gcagttttgt 1200
gtgaattggt ttcaattttt ttgaaatta 1229

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<210> 69
<211> 530
<212> PRT
<213> Homo sapiens

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<220>
<221> VARIANT
<222> (1) ... (530)
<223> UGT1A9*1 protein

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<400> 69
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          20          25          30
Met Asp Gly Ser His Trp Phe Thr Met Arg Ser Val Val Glu Lys Leu

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		35					40					45				
Ile	Leu	Arg	Gly	His	Glu	Val	Val	Val	Val	Met	Pro	Glu	Val	Ser	Trp	
	50					55					60					
Gln	Leu	Gly	Arg	Ser	Leu	Asn	Cys	Thr	Val	Lys	Thr	Tyr	Ser	Thr	Ser	
65					70					75					80	
Tyr	Thr	Leu	Glu	Asp	Leu	Asp	Arg	Glu	Phe	Lys	Ala	Phe	Ala	His	Ala	
				85					90					95		
Gln	Trp	Lys	Ala	Gln	Val	Arg	Ser	Ile	Tyr	Ser	Leu	Leu	Met	Gly	Ser	
			100					105					110			
Tyr	Asn	Asp	Ile	Phe	Asp	Leu	Phe	Phe	Ser	Asn	Cys	Arg	Ser	Leu	Phe	
		115					120					125				
Lys	Asp	Lys	Lys	Leu	Val	Glu	Tyr	Leu	Lys	Glu	Ser	Ser	Phe	Asp	Ala	
	130					135					140					
Val	Phe	Leu	Asp	Pro	Phe	Asp	Asn	Cys	Gly	Leu	Ile	Val	Ala	Lys	Tyr	
145					150					155					160	
Phe	Ser	Leu	Pro	Ser	Val	Val	Phe	Ala	Arg	Gly	Ile	Leu	Cys	His	Tyr	
				165					170					175		
Leu	Glu	Glu	Gly	Ala	Gln	Cys	Pro	Ala	Pro	Leu	Ser	Tyr	Val	Pro	Arg	
			180					185					190			
Ile	Leu	Leu	Gly	Phe	Ser	Asp	Ala	Met	Thr	Phe	Lys	Glu	Arg	Val	Arg	
			195				200					205				
Asn	His	Ile	Met	His	Leu	Glu	Glu	His	Leu	Leu	Cys	His	Arg	Phe	Phe	
	210					215					220					
Lys	Asn	Ala	Leu	Glu	Ile	Ala	Ser	Glu	Ile	Leu	Gln	Thr	Pro	Val	Thr	
225					230					235					240	
Glu	Tyr	Asp	Leu	Tyr	Ser	His	Thr	Ser	Ile	Trp	Leu	Leu	Arg	Thr	Asp	
				245					250					255		
Phe	Val	Leu	Asp	Tyr	Pro	Lys	Pro	Val	Met	Pro	Asn	Met	Ile	Phe	Ile	
			260					265					270			
Gly	Gly	Ile	Asn	Cys	His	Gln	Gly	Lys	Pro	Leu	Pro	Met	Glu	Phe	Glu	
			275				280					285				
Ala	Tyr	Ile	Asn	Ala	Ser	Gly	Glu	His	Gly	Ile	Val	Val	Phe	Ser	Leu	
	290					295					300					
Gly	Ser	Met	Val	Ser	Glu	Ile	Pro	Glu	Lys	Lys	Ala	Met	Ala	Ile	Ala	
305					310					315					320	
Asp	Ala	Leu	Gly	Lys	Ile	Pro	Gln	Thr	Val	Leu	Trp	Arg	Tyr	Thr	Gly	
				325					330					335		
Thr	Arg	Pro	Ser	Asn	Leu	Ala	Asn	Asn	Thr	Ile	Leu	Val	Lys	Trp	Leu	
			340					345					350			
Pro	Gln	Asn	Asp	Leu	Leu	Gly	His	Pro	Met	Thr	Arg	Ala	Phe	Ile	Thr	
		355					360					365				
His	Ala	Gly	Ser	His	Gly	Val	Tyr	Glu	Ser	Ile	Cys	Asn	Gly	Val	Pro	
	370					375					380					
Met	Val	Met	Met	Pro	Leu	Phe	Gly	Asp	Gln	Met	Asp	Asn	Ala	Lys	Arg	
385					390					395						

Leu Thr Val Ala Phe Ile Thr Phe Lys Cys Cys Ala Tyr Gly Tyr Arg  
                   500                  505                  510  
 Lys Cys Leu Gly Lys Lys Gly Arg Val Lys Lys Ala His Lys Ser Lys  
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 Thr His  
           530

<210> 70  
 <211> 530  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> VARIANT  
 <222> (1)...(50)  
 <223> UGT1A9\*2 protein

<400> 70  
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                   20                  25                  30  
 Met Asp Gly Ser His Trp Phe Thr Met Arg Ser Val Val Glu Lys Leu  
           35                  40                  45  
 Ile Leu Arg Gly His Glu Val Val Val Val Met Pro Glu Val Ser Trp  
   50                  55                  60  
 Gln Leu Gly Arg Ser Leu Asn Cys Thr Val Lys Thr Tyr Ser Thr Ser  
  65                  70                  75                  80  
 Tyr Thr Leu Glu Asp Leu Asp Arg Glu Phe Lys Ala Phe Ala His Ala  
                   85                  90                  95  
 Gln Trp Lys Ala Gln Val Arg Ser Ile Tyr Ser Leu Leu Met Gly Ser  
                   100                  105                  110  
 Tyr Asn Asp Ile Phe Asp Leu Phe Phe Ser Asn Cys Arg Ser Leu Phe  
           115                  120                  125  
 Lys Asp Lys Lys Leu Val Glu Tyr Leu Lys Glu Ser Ser Phe Asp Ala  
           130                  135                  140  
 Val Phe Leu Asp Pro Phe Asp Asn Cys Gly Leu Ile Val Ala Lys Tyr  
  145                  150                  155                  160  
 Phe Ser Leu Pro Ser Val Val Phe Ala Arg Gly Ile Leu Cys His Tyr  
                   165                  170                  175  
 Leu Glu Glu Gly Ala Gln Cys Pro Ala Pro Leu Ser Tyr Val Pro Arg  
           180                  185                  190  
 Ile Leu Leu Gly Phe Ser Asp Ala Met Thr Phe Lys Glu Arg Val Arg  
           195                  200                  205  
 Asn His Ile Met His Leu Glu Glu His Leu Leu Cys His Arg Phe Phe  
           210                  215                  220  
 Lys Asn Ala Leu Glu Ile Ala Ser Glu Ile Leu Gln Thr Pro Val Thr  
  225                  230                  235                  240  
 Glu Tyr Asp Leu Tyr Ser His Thr Ser Ile Trp Leu Leu Arg Thr Asp  
                   245                  250                  255  
 Phe Val Leu Asp Tyr Pro Lys Pro Val Met Pro Asn Met Ile Phe Ile  
                   260                  265                  270  
 Gly Gly Ile Asn Cys His Gln Gly Lys Pro Leu Pro Met Glu Phe Glu  
           275                  280                  285  
 Ala Tyr Ile Asn Ala Ser Gly Glu His Gly Ile Val Val Phe Ser Leu  
           290                  295                  300  
 Gly Ser Met Val Ser Glu Ile Pro Glu Lys Lys Ala Met Ala Ile Ala

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305          310          315          320
Asp Ala Leu Gly Lys Ile Pro Gln Thr Val Leu Trp Arg Tyr Thr Gly
          325          330          335
Thr Arg Pro Ser Asn Leu Ala Asn Asn Thr Ile Leu Val Lys Trp Leu
          340          345          350
Pro Gln Asn Asp Leu Leu Gly His Pro Met Thr Arg Ala Phe Ile Thr
          355          360          365
His Ala Gly Ser His Gly Val Tyr Glu Ser Ile Cys Asn Gly Val Pro
          370          375          380
Met Val Met Met Pro Leu Phe Gly Asp Gln Met Asp Asn Ala Lys Arg
385          390          395          400
Met Glu Thr Lys Gly Ala Gly Val Thr Leu Asn Val Leu Glu Met Thr
          405          410          415
Ser Glu Asp Leu Glu Asn Ala Leu Lys Ala Val Ile Asn Asp Lys Ser
          420          425          430
Tyr Lys Glu Asn Ile Met Arg Leu Ser Ser Leu His Lys Asp Arg Pro
          435          440          445
Val Glu Pro Leu Asp Leu Ala Val Phe Trp Val Glu Phe Val Met Arg
          450          455          460
His Lys Gly Ala Pro His Leu Arg Pro Ala Ala His Asp Leu Thr Trp
465          470          475          480
Tyr Gln Tyr His Ser Leu Asp Val Ile Gly Phe Leu Leu Ala Val Val
          485          490          495
Leu Thr Val Ala Phe Ile Thr Phe Lys Cys Cys Ala Tyr Gly Tyr Arg
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Lys Cys Leu Gly Lys Lys Gly Arg Val Lys Lys Ala His Lys Ser Lys
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Thr His
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<210> 71

<211> 530

<212> PRT

<213> Homo sapiens

<220>

<221> VARIANT

<222> (1)...(530)

<223> UGT1A9\*3 protein

<400> 71

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          20          25          30
Thr Asp Gly Ser His Trp Phe Thr Met Arg Ser Val Val Glu Lys Leu
          35          40          45
Ile Leu Arg Gly His Glu Val Val Val Val Met Pro Glu Val Ser Trp
          50          55          60
Gln Leu Gly Arg Ser Leu Asn Cys Thr Val Lys Thr Tyr Ser Thr Ser
65          70          75          80
Tyr Thr Leu Glu Asp Leu Asp Arg Glu Phe Lys Ala Phe Ala His Ala
          85          90          95
Gln Trp Lys Ala Gln Val Arg Ser Ile Tyr Ser Leu Leu Met Gly Ser
          100          105          110
Tyr Asn Asp Ile Phe Asp Leu Phe Phe Ser Asn Cys Arg Ser Leu Phe
          115          120          125

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Lys Asp Lys Lys Leu Val Glu Tyr Leu Lys Glu Ser Ser Phe Asp Ala  
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 Val Phe Leu Asp Pro Phe Asp Asn Cys Gly Leu Ile Val Ala Lys Tyr  
 145 150 155 160  
 Phe Ser Leu Pro Ser Val Val Phe Ala Arg Gly Ile Leu Cys His Tyr  
 165 170 175  
 Leu Glu Glu Gly Ala Gln Cys Pro Ala Pro Leu Ser Tyr Val Pro Arg  
 180 185 190  
 Ile Leu Leu Gly Phe Ser Asp Ala Met Thr Phe Lys Glu Arg Val Arg  
 195 200 205  
 Asn His Ile Met His Leu Glu His Leu Leu Cys His Arg Phe Phe  
 210 215 220  
 Lys Asn Ala Leu Glu Ile Ala Ser Glu Ile Leu Gln Thr Pro Val Thr  
 225 230 235 240  
 Glu Tyr Asp Leu Tyr Ser His Thr Ser Ile Trp Leu Leu Arg Thr Asp  
 245 250 255  
 Phe Val Leu Asp Tyr Pro Lys Pro Val Met Pro Asn Met Ile Phe Ile  
 260 265 270  
 Gly Gly Ile Asn Cys His Gln Gly Lys Pro Leu Pro Met Glu Phe Glu  
 275 280 285  
 Ala Tyr Ile Asn Ala Ser Gly Glu His Gly Ile Val Val Phe Ser Leu  
 290 295 300  
 Gly Ser Met Val Ser Glu Ile Pro Glu Lys Lys Ala Met Ala Ile Ala  
 305 310 315 320  
 Asp Ala Leu Gly Lys Ile Pro Gln Thr Val Leu Trp Arg Tyr Thr Gly  
 325 330 335  
 Thr Arg Pro Ser Asn Leu Ala Asn Asn Thr Ile Leu Val Lys Trp Leu  
 340 345 350  
 Pro Gln Asn Asp Leu Leu Gly His Pro Met Thr Arg Ala Phe Ile Thr  
 355 360 365  
 His Ala Gly Ser His Gly Val Tyr Glu Ser Ile Cys Asn Gly Val Pro  
 370 375 380  
 Met Val Met Met Pro Leu Phe Gly Asp Gln Met Asp Asn Ala Lys Arg  
 385 390 395 400  
 Met Glu Thr Lys Gly Ala Gly Val Thr Leu Asn Val Leu Glu Met Thr  
 405 410 415  
 Ser Glu Asp Leu Glu Asn Ala Leu Lys Ala Val Ile Asn Asp Lys Ser  
 420 425 430  
 Tyr Lys Glu Asn Ile Met Arg Leu Ser Ser Leu His Lys Asp Arg Pro  
 435 440 445  
 Val Glu Pro Leu Asp Leu Ala Val Phe Trp Val Glu Phe Val Met Arg  
 450 455 460  
 His Lys Gly Ala Pro His Leu Arg Pro Ala Ala His Asp Leu Thr Trp  
 465 470 475 480  
 Tyr Gln Tyr His Ser Leu Asp Val Ile Gly Phe Leu Leu Ala Val Val  
 485 490 495  
 Leu Thr Val Ala Phe Ile Thr Phe Lys Cys Cys Ala Tyr Gly Tyr Arg  
 500 505 510  
 Lys Cys Leu Gly Lys Lys Gly Arg Val Lys Lys Ala His Lys Ser Lys  
 515 520 525  
 Thr His  
 530